

Nov-18-02 07:48pm From:HBS&R
 09/659,599

1978-341-0136

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Please amend the application as follows:

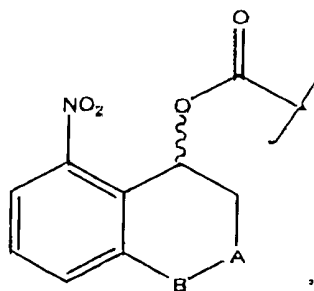
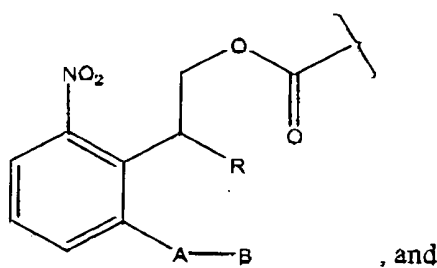
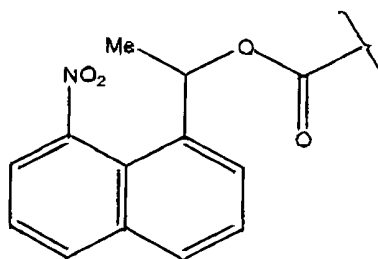
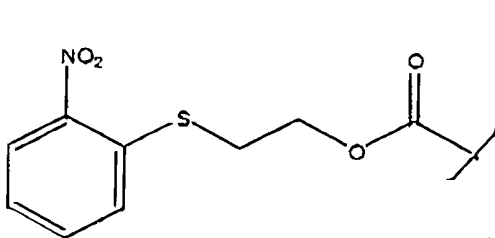
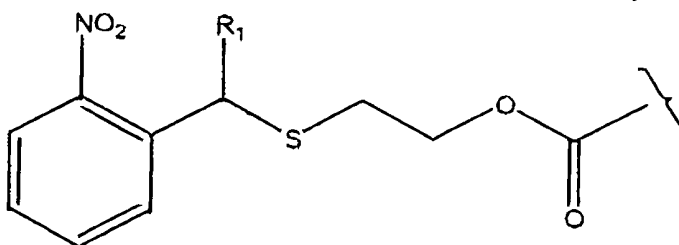
In the Claims

Please amend Claims 1, 5, 7, 8, 14, 30, 32 and 34. Amendments to the claims are indicated in the attached "Marked Up Version of Amendments" (pages i - xv).

1. (Twice Amended) A compound represented by the formula M-Y, wherein:

M is a monomeric building block, a solid surface or a gel having a reactive site that is masked by Y; and

Y is a photolabile protecting group selected from the group consisting of:



wherein:

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the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or $(CH_2)_n$;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

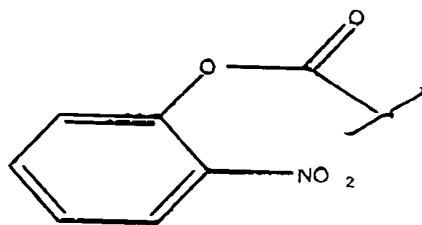
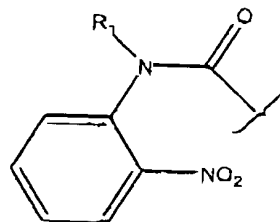
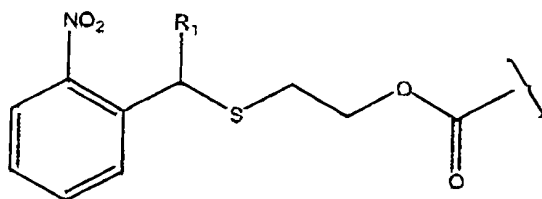
R and R₁ are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group.

5. (Twice Amended) A method of attaching a molecule with a reactive site to a support comprising the steps of:

- (a) providing a support with a reactive site;
- (b) binding a first molecule represented by the formula M₁-Y₁ to the reactive site, wherein:

M₁ is a monomeric building block having a reactive site that is masked by Y₁; and

Y₁ is a photolabile protecting group selected from the group consisting of:

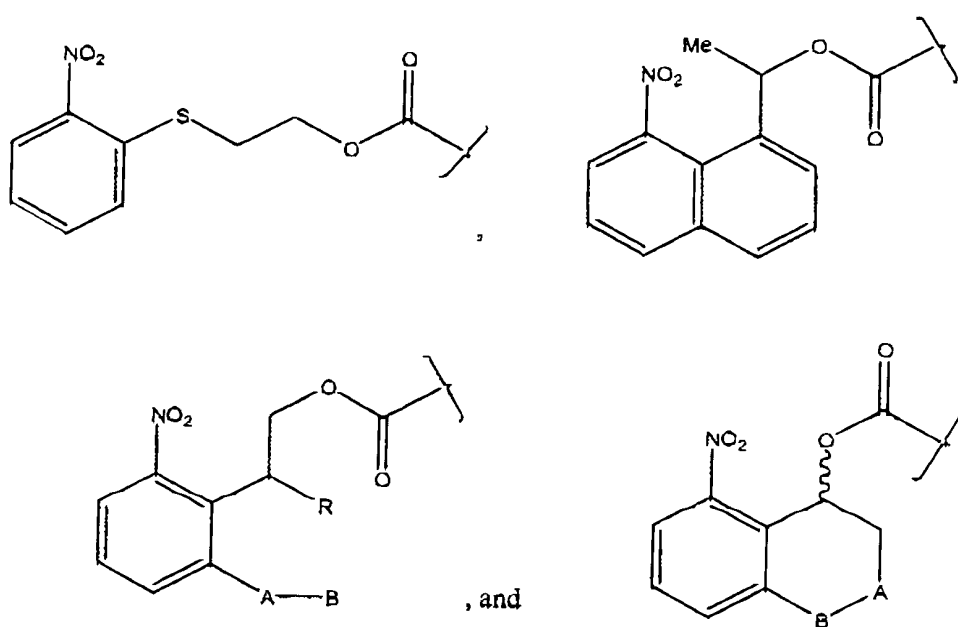


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wherein:

the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or $(CH_2)_n$;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

R and R₁ are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group; and

- (c) removing Y₁ to provide a derivatized support comprising M₁ with an unmasked reactive site immobilized thereon.

7. (Twice Amended) The method of Claim 5, further comprising:

- (a) coupling an additional molecule represented by the formula M₁-Y₁ to the unmasked reactive site, wherein Y₁ of the additional molecule is selected from the group of photolabile protecting groups listed in Claim 5 and is the same as or different from Y₁ of the first molecule, and M₁ of the additional molecule is a monomeric building block and is the same as or different from M₁ of the first

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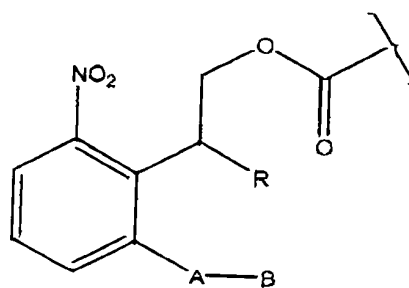
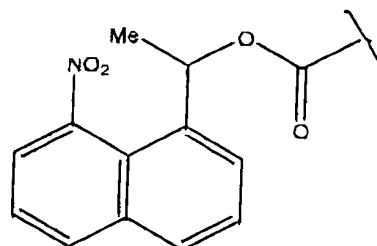
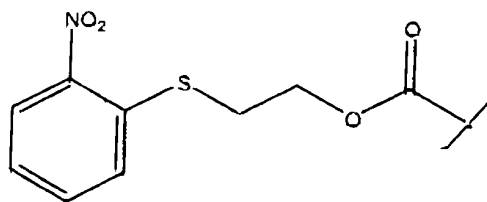
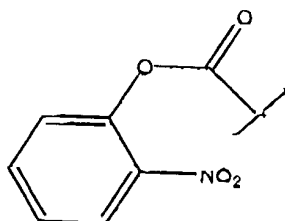
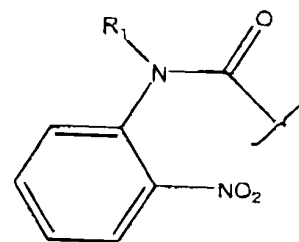
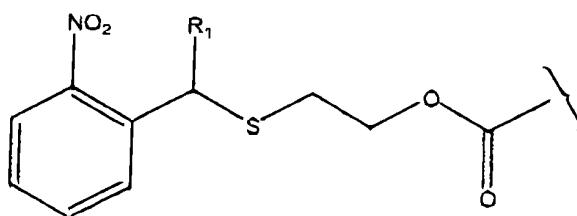
- molecule, to produce a derivatized support having immobilized thereon a chain of the first and the additional molecules; and
- (b) removing Y_1 from the additional molecule to provide a derivatized support with a chain of the first and the additional molecules with an unmasked reactive site immobilized thereon.
8. (Twice Amended) The method of Claim 7, further comprising repeating steps (a) and (b) to provide a chain of molecules immobilized on the support.
14. (Twice Amended) A method of forming, from component molecules represented by the formula M_1-Y_1 , a plurality of compounds bound to a support, each compound occupying a separate predefined region of the support, said method comprising the steps of:
- (a) activating a first region of the support;
 - (b) binding a molecule represented by the formula M_1-Y_1 to the first region;
 - (c) repeating steps (a) and (b) on other regions of the support whereby each of said other regions has bound thereto a molecule represented by the formula M_1-Y_1 , wherein M_1 is the same as or different from M_1 of step (b) and Y_1 is the same as or different from Y_1 of step (b);
 - (d) removing Y_1 from the M_1 that is bound to one or more regions of the support to provide one or more regions having an unmasked reactive site;
 - (e) binding an additional molecule represented by the formula M_1-Y_1 to the said one or more unmasked reactive sites, wherein M_1 is the same as or different from M_1 of steps (b) and (c) and Y_1 is the same as or different from Y_1 of steps (b) and (c); and
 - (f) repeating steps (d) and (e) on regions of the support until a desired plurality of compounds is formed from the component molecules represented by formula M_1-Y_1 , each compound occupying separate predefined regions of the support;
- wherein:
- M_1 is a monomeric building block having a reactive site that is masked by Y_1 ; and
 Y_1 is a photolabile protecting group selected from the group consisting of:

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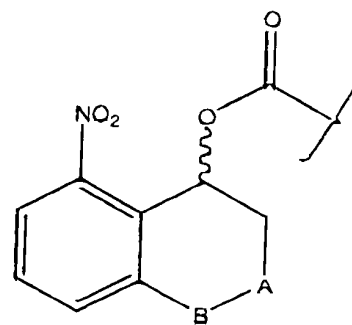
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, and



wherein:

the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or $(CH_2)_n$;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

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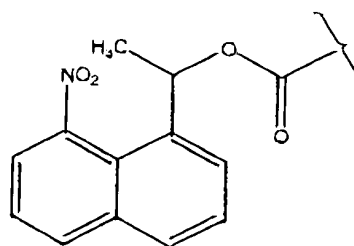
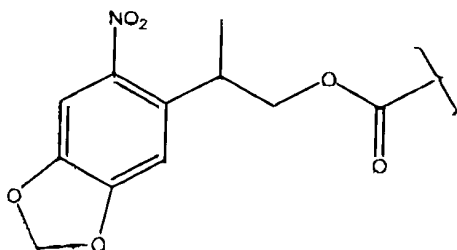
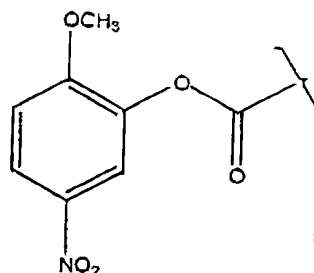
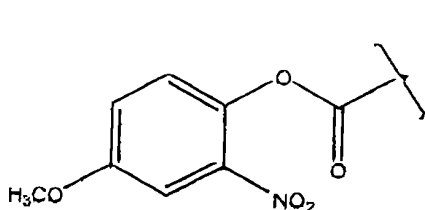
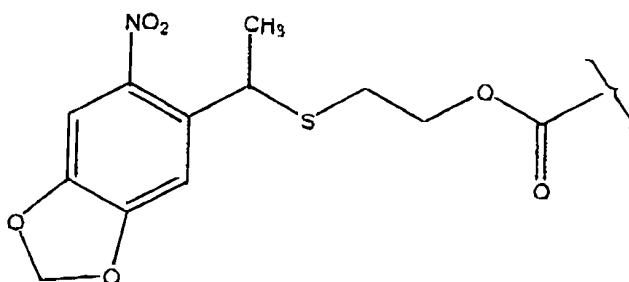
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R and R₁ are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group.

30. (Amended) A compound represented by the formula M-Y₁, wherein:

M is a monomeric building block, a solid surface or a gel having a reactive site that is masked by Y₁; and

Y₁ is selected from the group consisting of:



, and

32. (Amended) A method of attaching a molecule with a reactive site to a support comprising the steps of:

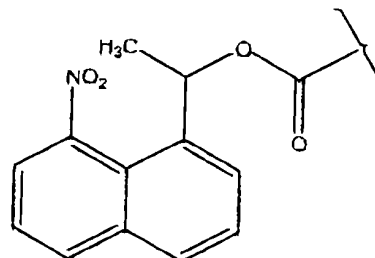
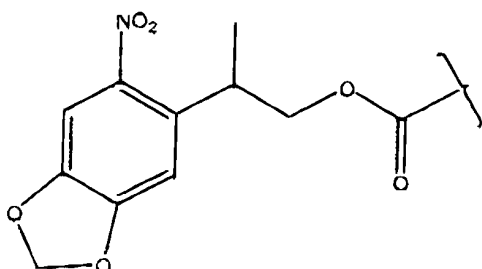
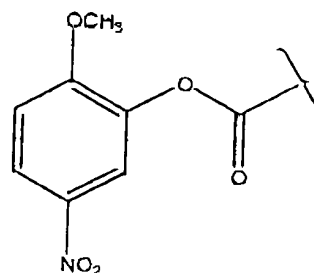
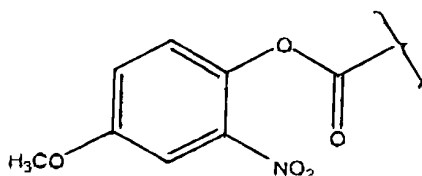
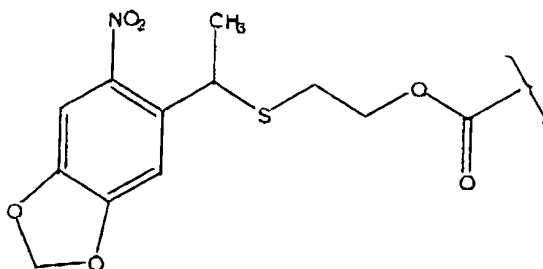
(a) providing a support with a reactive site;

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- (b) binding a first molecule represented by the formula M_1-Y_1 to the reactive site, wherein:

M_1 is a monomeric building block having a reactive site that is masked by Y_1 ; and

Y_1 is a photolabile protecting group selected from the group consisting of:



, and

- (c) removing Y_1 to provide a derivatized support comprising M_1 with an unmasked reactive site immobilized thereon;
- (d) coupling an additional molecule represented by the formula M_1-Y_1 to the unmasked reactive site, wherein Y_1 and M_1 of the additional molecule are selected independent of the first molecule, to produce a derivatized support having immobilized thereon a chain of the first and the additional molecules;

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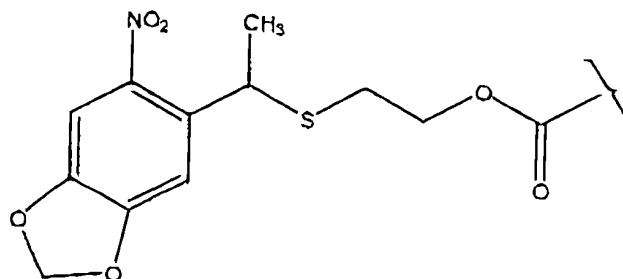
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- (e) removing Y_1 from the additional molecule to provide a derivatized support with a chain of the first and the additional molecules with a second unmasked reactive site immobilized thereon; and
 - (f) repeating steps (d) and (e) with a succession of molecules, to provide a chain of molecules immobilized on the support.
34. (Amended) A method of forming, from component molecules represented by the formula M_1-Y_1 , a plurality of compounds bound to a support, each compound occupying a separate predefined region of the support, said method comprising the steps of:
- (a) activating a first region of the support;
 - (b) binding a molecule represented by the formula M_1-Y_1 to the first region;
 - (c) repeating steps (a) and (b) on other regions of the support whereby each of said other regions has bound thereto a molecule represented by the formula M_1-Y_1 , wherein M_1 is the same as or different from M_1 of step (b) and Y_1 is the same as or different from Y_1 of step (b);
 - (d) removing Y_1 from the M_1 that is bound to one or more regions of the support to provide one or more regions having an unmasked reactive site;
 - (e) binding an additional molecule represented by the formula M_1-Y_1 to the said one or more unmasked reactive sites, wherein M_1 is the same as or different from M_1 of steps (b) and (c) and Y_1 is the same as or different from Y_1 of steps (b) and (c); and
 - (f) repeating steps (d) and (e) on regions of the support until a desired plurality of compounds is formed from the component molecules represented by formula M_1-Y_1 , each compound occupying separate predefined regions of the support;

wherein:

M_1 is a monomeric building block having a reactive site that is masked by Y_1 ; and
 Y_1 is a photolabile protecting group selected from the group consisting of:

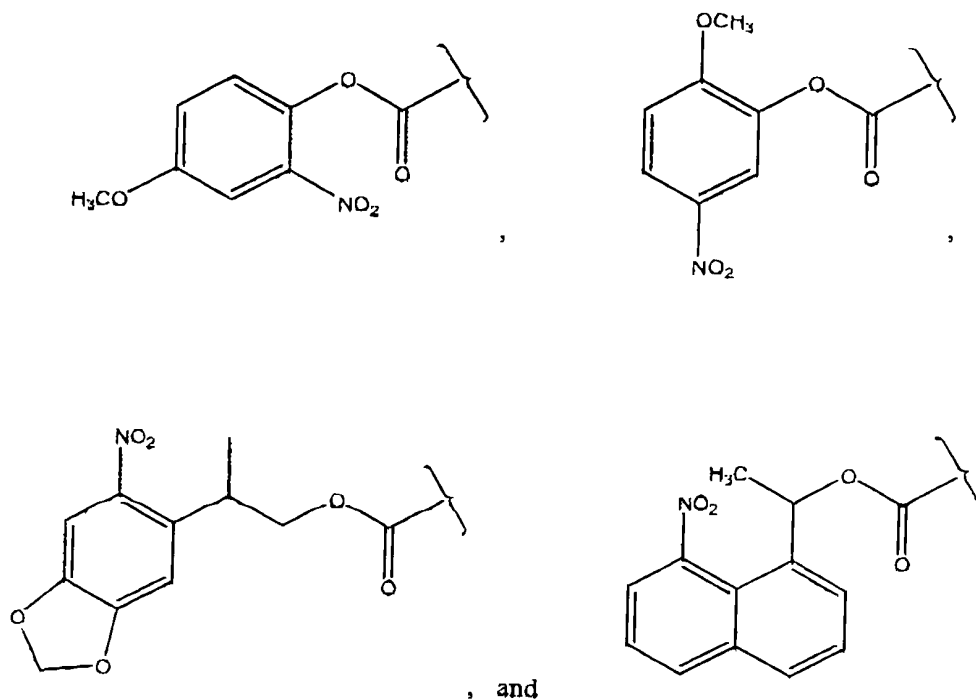


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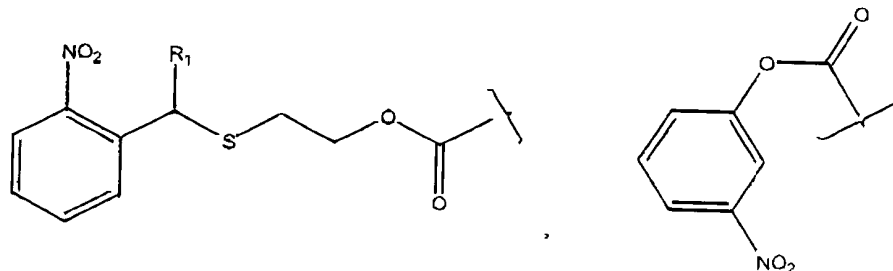
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Please add new Claims 36-38 as follows:

36. (New) A compound represented by the formula M-Y, wherein:
 M is selected from the group consisting of nucleic acids, nucleosides and analogs thereof, nucleotides and analogs thereof, and monosaccharides, all having a reactive site that is masked by Y; and
 Y is a photolabile protecting group selected from the group consisting of:

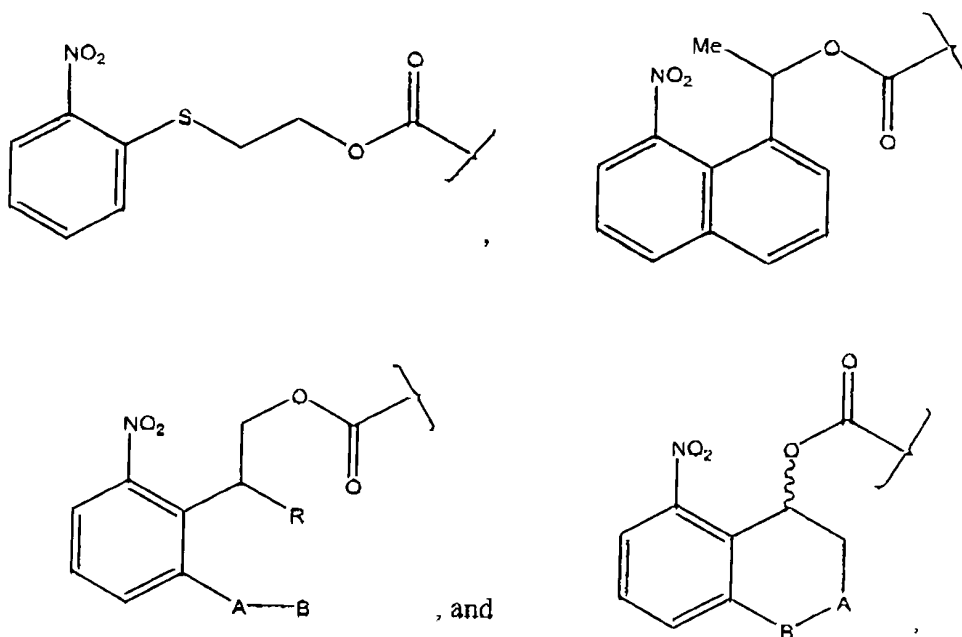


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wherein:

the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or (CH₂)_n;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

R and R₁ are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group.

37. (New) A method of attaching a molecule with a reactive site to a support comprising the steps of:

- providing a support with a reactive site;
- binding a first molecule represented by the formula M₁-Y₁ to the reactive site, wherein:

M₁ is a monomeric building block selected from the group consisting of nucleic acids, nucleosides and analogs thereof, nucleotides and analogs thereof, and monosaccharides, all having a reactive site that is masked by Y₁; and

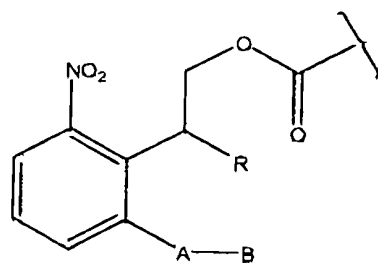
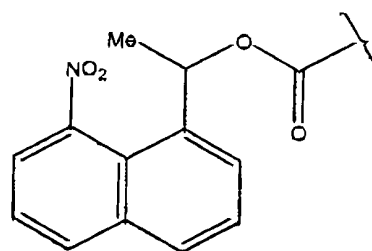
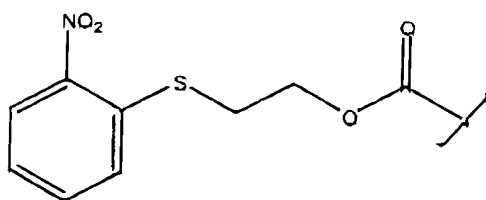
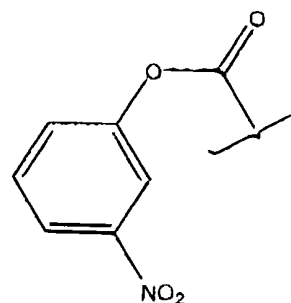
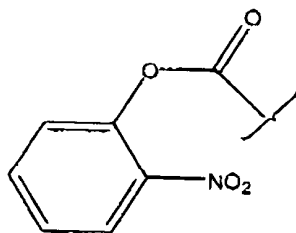
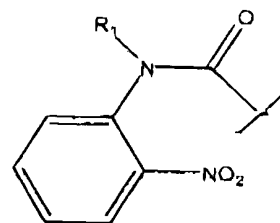
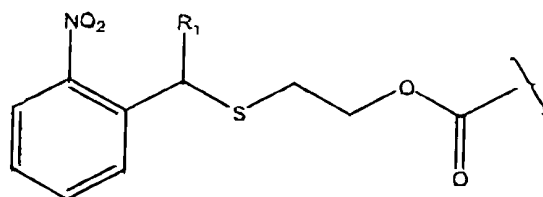
Y₁ is a photolabile protecting group selected from the group consisting of:

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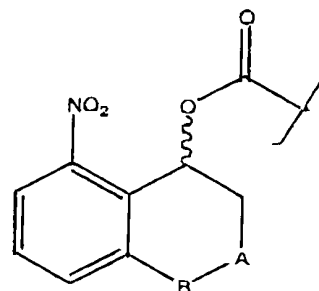
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, and



wherein:

the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or (CH₂)_n;

n is 1 to about 3;

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B is an aprotic, weakly basic group; and

R and R₁ are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group; and

- (c) removing Y₁ to provide a derivatized support comprising M₁ with an unmasked reactive site immobilized thereon.

38. (New) A method of forming, from component molecules represented by the formula M₁-Y₁, a plurality of compounds bound to a support, each compound occupying a separate predefined region of the support, said method comprising the steps of:
- (a) activating a first region of the support;
 - (b) binding a molecule represented by the formula M₁-Y₁ to the first region;
 - (c) repeating steps (a) and (b) on other regions of the support whereby each of said other regions has bound thereto a molecule represented by the formula M₁-Y₁, wherein M₁ is the same as or different from M₁ of step (b) and Y₁ is the same as or different from Y₁ of step (b);
 - (d) removing Y₁ from the M₁ that is bound to one or more regions of the support to provide one or more regions having an unmasked reactive site;
 - (e) binding an additional molecule represented by the formula M₁-Y₁ to the said one or more unmasked reactive sites, wherein M₁ is the same as or different from M₁ of steps (b) and (c) and Y₁ is the same as or different from Y₁ of steps (b) and (c); and
 - (f) repeating steps (d) and (e) on regions of the support until a desired plurality of compounds is formed from the component molecules represented by formula M₁-Y₁, each compound occupying separate predefined regions of the support;
- wherein:

M₁ is a monomeric building block selected from the group consisting of nucleic acids, nucleosides and analogs thereof, nucleotides and analogs thereof, and monosaccharides, all having a reactive site that is masked by Y₁; and

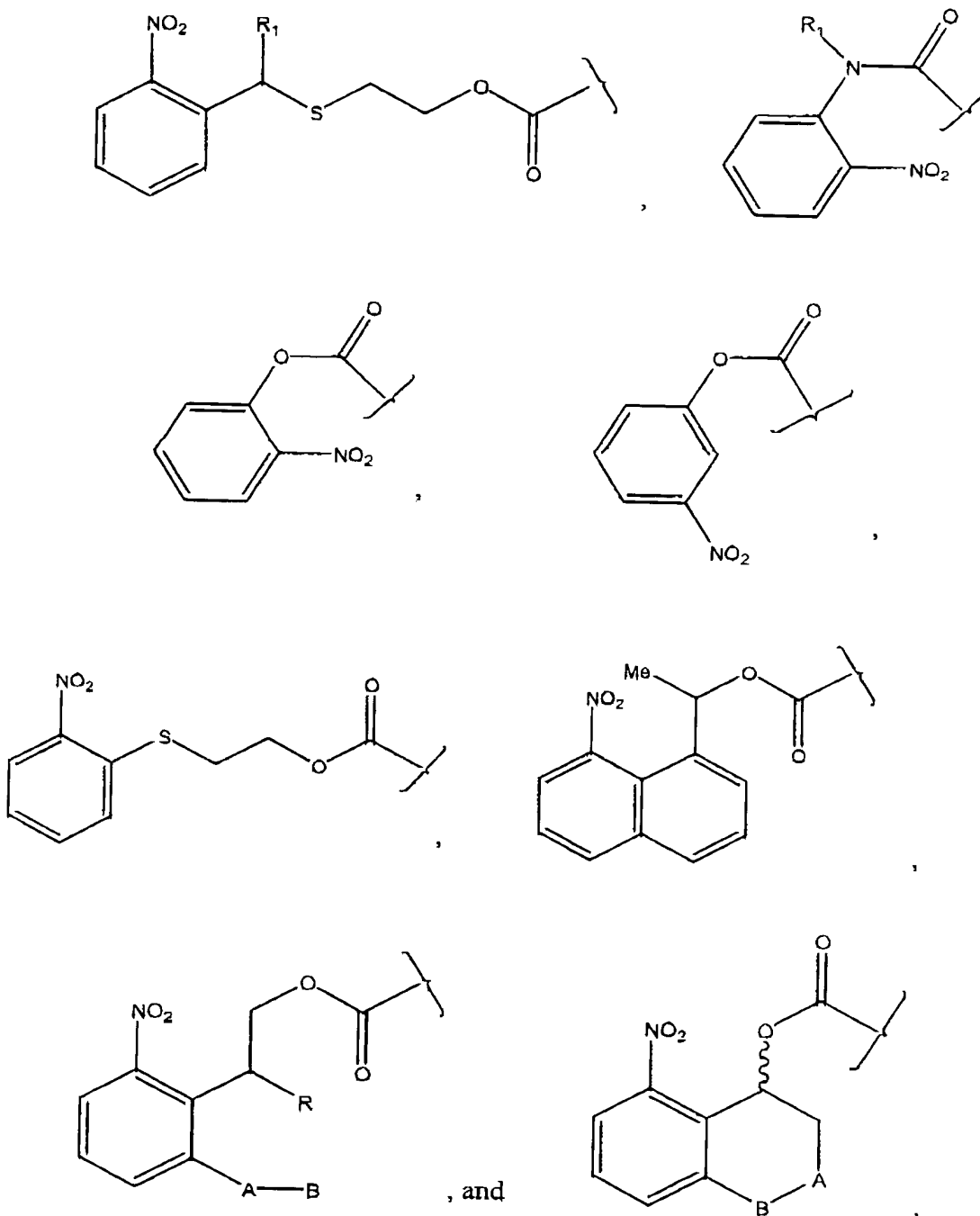
Y₁ is a photolabile protecting group selected from the group consisting of:

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wherein:

the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;

A is O, S, N-alkyl, N-aryl or $(\text{CH}_2)_n$;

n is 1 to about 3;